CLAIMS

We claim:

1. A fermentation medium comprising a cytokinin-containing preparation that comprises a cytokinin at a concentration effective to increase fermentation of a microorganism.

2. The fermentation medium of claim 1 wherein the cytokinin-containing preparation comprises a synthetic cytokinin having a purine heterocyclic base or a pyrimidine heterocyclic base.

3. The fermentation medium of claim 2 wherein the purine heterocyclic base is an N^6-substituted adenine or an optionally N^6-substituted guanine.

4. The fermentation medium of claim 2 wherein the synthetic cytokinin is selected from the group consisting of N^6-benzyladenine, N^6-benzyladenosine, N^6-benzyladenine-3-glucoside, N^6-benzyladenine-7-glucoside, N^6-benzyladenine-9-glucoside, N^6-benzyl-9-(2-tetrahydropyranyl)adenine, N^6-benzyladenosine-5'-monophosphate, N^6-gamma, gamma-dimethyl-allyl-aminopurine, dihydrozeatin, dihydrozeatin riboside, dihydrozeatin-7-beta-D-glucoside, dihydrozeatin-9-beta-D-glucoside, dihydrozeatin-O-glucoside, dihydrozeatin-O-glucoside riboside, dihydrozeatin riboside-5'-monophosphate, dihydrozeatin-O-acetyl; N^6-isopentenyladenine, N^6-isopentenyladenosine, N^6-isopentenyladenosine-5'-monophosphate, N^6-isopentenyladenine-7-glucoside, N^6-isopentenyladenine-9-glucoside, 2-methylthio-N^6-isopentenyladenosine, 2-methylthio-N^6-isopentenyladenine, 2-thio-N^6-isopentenyladenine, 2-benzylthio-N^6-isopentenyladenine, 2-isopentenylamine, kinetin, kinetin riboside, kinetin-9-glucoside, kinetin riboside-5'-monophosphate, meta-topolin, meta-topolin riboside, meta-topolin-9-glucoside, ortho-topolin, ortho-topolin riboside, ortho-topolin-9-glucoside, trans-zeatin, trans-zeatin riboside, cis-zeatin, cis-zeatin riboside, trans-zeatin-7-glucoside, trans-zeatin-9-glucoside, trans-zeatin-O-glucoside, trans-zeatin-O-glucoside riboside, trans-zeatin riboside-5'-monophosphate, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, 2-methylthio-trans-zeatin, and 2-methylthio-trans-zeatin riboside.

5. The fermentation medium of claim 4 wherein the cytokinin is present in the fermentation medium at a concentration of at least 1.0 microM.

6. The fermentation medium of claim 1 wherein the cytokinin-containing preparation comprises a plant extract.

7. The fermentation medium of claim 6 wherein the plant is a member of the genus *Hordeum*.

8. The fermentation medium of claim 1 wherein the cytokinin is present in the fermentation medium at a concentration effective to activate an AMP-activated protein kinase of the microorganism.

9. The fermentation medium of claim 1 wherein the cytokinin is present in the fermentation medium at a concentration effective to increase uptake of a carbohydrate into the microorganism.

10. The fermentation medium of claim 1 wherein the microorganism is a yeast and a member of the genus *Saccharomyces*.

11. The fermentation medium of claim 1 wherein the fermentation medium is a liquid and wherein the fermentation comprises production of at least one of ethanol and carbon dioxide.

12. The fermentation medium of claim 11 wherein the liquid is a beverage for human consumption.

13. The fermentation medium of claim 1 wherein the fermentation medium is a dough and wherein the fermentation comprises production of carbon dioxide.

14. A method of increasing fermentation of a microorganism, comprising:

providing a cytokinin-containing preparation, and providing a fermentation medium; and

combining the fermentation medium with the cytokinin-containing preparation, wherein the cytokinin-containing preparation is present the fermentation medium in an amount effective to increase fermentation of a microorganism.

15. The method of claim 14 wherein the cytokinin-containing preparation comprises a cytokinin that includes an N^6-substituted adenine or an optionally N^6-substituted guanine.

16. The method of claim 14 wherein the cytokinin-containing preparation comprises a cytokinin selected from the group consisting of N^6-benzyladenine, N^6-benzyladenosine, N^6-benzyladenine-3-glucoside, N^6-benzyladenine-7-glucoside, N^6-benzyladenine-9-glucoside, N^6-benzyl-9-(2-tetrahydropyranyl)adenine, N^6-benzyladenosine-5'-monophosphate, N^6-gamma, gamma-dimethyl-allyl-aminopurine, dihydrozeatin, dihydrozeatin riboside, dihydrozeatin-7-beta-D-glucoside, dihydrozeatin-9-beta-D-glucoside, dihydrozeatin-O-glucoside, dihydrozeatin-O-glucoside riboside, dihydrozeatin riboside-5'-monophosphate, dihydrozeatin-O-acetyl; N^6-isopentenyladenine, N^6-isopentenyladenosine, N^6-isopentenyladenosine-5'-monophosphate, N^6-isopentenyladenine-7-glucoside, N^6-isopentenyladenine-9-glucoside, 2-methylthio-N^6-isopentenyladenosine, 2-methylthio-N^6-isopentenyladenine, 2-thio-N^6-isopentenyladenine, 2-benzylthio-N^6-isopentenyladenine, 2-isopentenylamine, kinetin, kinetin riboside, kinetin-9-glucoside, kinetin riboside-5'-monophosphate, meta-topolin, meta-topolin riboside, meta-topolin-9-glucoside, ortho-topolin, ortho-topolin riboside, ortho-topolin-9-glucoside, trans-zeatin, trans-zeatin riboside, cis-zeatin, cis-zeatin riboside, trans-zeatin-7-glucoside, trans-zeatin-9-glucoside, trans-zeatin-O-glucoside, trans-zeatin-O-glucoside riboside, trans-zeatin riboside-5'-monophosphate, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, 2-methylthio-trans-zeatin, and 2-methylthio-trans-zeatin riboside.

17. The method of claim 16 wherein the cytokinin is present in the fermentation medium at a concentration of at least 1.0 microM.

18. The method of claim 14 wherein the cytokinin is present in the fermentation medium at a concentration effective to activate an AMP-activated protein kinase of the microorganism.

19. The method of claim 14 wherein the cytokinin is present in the fermentation medium at a concentration effective to increase uptake of a carbohydrate into the microorganism.

20. The fermentation medium of claim 1 wherein the microorganism is a yeast and a member of the genus *Saccharomyces*, wherein the fermentation medium is a liquid, and wherein the fermentation comprises production of at least one of ethanol and carbon dioxide.

21. A method of marketing a product, comprising a step of providing information that a cytokinin increases fermentation of a microorganism.